WHAT IS CLAIMED IS:

1. An engine, comprising:

a. a rotating assembly including a primary compressor, an inner casing and a compressor-driving nozzle wheel;

b. an outer casing, enclosing said rotating assembly

so that at least one combustion chamber is defined in the space between said primary compressor, said inner casing, said compressor-driving nozzle wheel and said outer casing, characterized in that said outer casing does not rotate with said rotating assembly.

2. The engine of claim 1, wherein said at least one combustion chamber is substantially a single annular combustion chamber.

3. The engine of claim 1, further comprising

c. a combustion chamber compressor in said combustion chamber.

4. The engine of claim 3, wherein said combustion chamber compressor comprises a plurality of combustion chamber compressor blades attached to said inner casing.

5. The engine of claim 1, wherein said rotating assembly further includes a substantially annular flame holder disposed within said combustion chamber.

6. The engine of claim 1, further comprising:

c. a substantially tubular element surrounding said inner casing, wherein a leading edge of said tubular element is positioned aft of said primary compressor so as to divide airflow from said primary compressor into an outer airflow and an inner airflow, wherein said outer airflow is between said tubular element and said outer casing and wherein said inner airflow is between said tubular element and said inner casing

7. The engine of claim 6 wherein through said substantially tubular element are perforations allowing communication between said inner airflow and said outer airflow.

8. The engine of claim 1 further comprising:

c. a rotating diffuser between said primary compressor and said combustion chamber.

9. The engine of claim 8 wherein said rotating diffuser includes extensions to terminal blades of said primary compressor.

10. The engine of claim 1 wherein said rotating assembly further includes at least one fuel injector.

11. An engine comprising:

a. a combustion chamber having an axis; and

b. a combustion chamber compressor, coaxial with and radially inwards from said combustion chamber configured to counteract axial backflow in said combustion chamber.

12. The engine of claim 11 wherein said combustion chamber compressor includes:

c. at least two combustion chamber compressor blades arrayed about said axis of said combustion chamber in at least one circle; and

d. a substantially tubular combustion chamber compressor body encasing said combustion chamber compressor blades.

13. The engine of claim 11 further comprising:

c. a rotating combustion chamber inner casing coaxial with said combustion chamber;

d. at least two combustion chamber compressor blades rigidly attached to said rotating combustion chamber inner casing and arrayed about said axis of said combustion chamber in at least one circle; and

e. a substantially tubular combustion chamber compressor body encasing said combustion chamber compressor blades.

14. In an engine having a combustion chamber wherein a mixture of fuel and air is burned, a method of reducing $NO_X$ emissions comprising:

a. making a combustible mixture by combining exhaust, fuel and air in a first region of the engine; and

b. burning said combustible mixture in the combustion chamber;

wherein said exhaust is taken from a second region of the engine that has a higher static pressure than said first region.

15. A method of cooling a blade of a bladed rotating wheel attached to the terminal end of a rotating axis through a blade base, comprising:

a. providing at least one substantially axial channel rotating with the rotating axis, said at least one channel having an inlet and an outlet;

b. feeding a cooling fluid into said at least one channel through said inlet;

c. directing cooling fluid emerging from said channel through said outlet at the blade base.

16. The method of claim 15 further comprising:

d. increasing the pressure of said cooling fluid emerging through said outlet using a pressure-increasing device positioned inside said at least one channel.

17. The method of claim 15 wherein said bladed rotating wheel is a nozzle wheel and wherein said blade is a nozzle wheel blade.

18. The method of claim 15 wherein said bladed rotating wheel is a turbine wheel and wherein said blade is a turbine blade.

19. A method of producing torque comprising the steps of:

a) providing a vortex of a fluid rotating at a first angular velocity about an axis;

b) directing fluid from said vortex through at least one nozzle, said nozzle rotating on a shaft at a second angular velocity about said axis; and

c) extracting the torque from said shaft.

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20. The method of claim 19 wherein said first angular velocity and said second angular velocity are substantially equal.

21. The method of claim 19 further comprising :

d. enclosing said vortex within a non-rotating outer casing.

22. A method of producing torque comprising:

a. generating a vortex of compressed air rotating at a first angular velocity about an axisnixing a combustible fuel with said compressed air;

c. burning said combustible fuel within said vortex;

d. directing fluid heated by said burning from said vortex through at least one nozzle, said nozzle rotating on a shaft at a second angular velocity about said axis; and

e. extracting the torque from said shaft.

23. The method of claim 22 wherein said first angular velocity and said second angular velocity are substantially equal.

24. The method of claim 22 further comprising:

f. enclosing said vortex within a non-rotating outer casing.

25. The method of claim 22 wherein said generating of said vortex is performed by a compressor rotating about said axis at said second angular velocity.